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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/665,590	09/18/2003	Takao Yamanouchi	KOY-8	6837
20311	7590	11/22/2004	EXAMINER	
MUSERLIAN, LUCAS AND MERCANTI, LLP			DOTE, JANIS L	
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NEW YORK, NY 10016			1756	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/665,590	Applicant(s) YAMANOUCHI ET AL.	
	Examiner Janis L. Dote	Art Unit 1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 7-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☒ Claim(s) 6 is/are objected to.
- 8) ☒ Claim(s) 1-20 are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-6, drawn to toners, classified in class 430, subclass 110.3.

II. Claims 7-20, drawn to image forming methods, classified in class 430, subclasses 47 and 126.

2. The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the product as claimed can be used in a materially different process, such as cascade developing an electrostatic latent image on a sheet to form a toner image with a developer comprising the toner of Group I and a carrier. In cascade developing, the latent image is developed by flowing or cascading the developer over the electrostatic latent image. Such a process does not require "limiting an amount of toner on a surface of a toner carrier by allowing a

toner layer limiting member to be pressed to the surface of the toner carrier" as required in the processes of Group II.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, and as shown by their different classification, restriction for examination purposes as indicated is proper.

3. During a telephone conversation with Mr. Donald Lucas (Reg. No. 31,275) on Nov. 9, 2004, a provisional election was made with traverse to prosecute the invention of Group I, claims 1-6. Affirmation of this election must be made by applicants in replying to this Office action.

Claims 7-20 have been withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

4. Applicants are reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of

inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description:

In Fig. 5, the reference character 493 is not defined in the specification. See the specification, pages 77-81.

Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

6. The disclosure is objected to because of the following informalities:

The use of trademarks, e.g., Coulter Counter [sic: COULTER COUNTER} at page 23, lines 15-16, has been noted in this application. The trademarks should be capitalized wherever they appear and be accompanied by the generic terminology. This

example is not exhaustive. Applicants should review the entire specification for compliance.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Appropriate correction is required.

7. The instant specification has defined following terms recited in the instant claims:

(1) The term "shape factor" is defined at page 20, lines 1-10, as "a value for expressing a degree of roundness of the toner particle, and is given by the equation below:

Shape factor = $((\text{maximum diameter}/2)^2 \times \pi) / (\text{projected area})$." The parameters "maximum diameter" and "projected area" are defined at page 20, lines 5-10.

(2) The "arithmetic mean value of shape factor" is determined by the method disclosed at page 20, lines 11-18.

(3) The term "coefficient of variation of shape factor" is defined at page 20, line 19, to page 21, line 3, by the equation

Coefficient of variation of shape factor = $(S_1/K) \times 100(\%)$,
where S_1 represents standard deviation of shape factors of 100

toner particles, and K represents an average value of the shape factors.

(4) The term "rounded toner particle" is defined at page 22, lines 6-9, as "a toner particle substantially having no projected portions, and more specifically to a toner particle" as described at page 22, lines 9-24, and in Fig. 2A. The ratio of rounded toner particles is determined by the method disclosed at page 23, lines 5-10.

(5) The term "coefficient of variation of number particle distribution" is defined at page 24, lines 8-11, by the equation

$$\text{Coefficient of variation by number} = [S_1/D_n] \times 100,$$

where S_1 represents the standard deviation in the number particle diameter distribution, and D_n represents the number average particle diameter (μm). The parameters of the equation are determined by the method disclosed at page 23, line 13, to page 24, line 4.

(6) The term "conveyance index" is defined at page 15, lines 4-8, as an "index of conveyance property of the toner particle typically obtained by measurement using the parts feeder shown in Fig. 1 under constant vibration, and expresses how readily the toner can be conveyed, or in other words, mobility of the toner." The conveyance index is calculated by the equation disclosed at page 16, line 23, to page 24, line 4,

"Conveyance index = $(750-300)\text{mg}/(T750-T300)\text{sec}$,

where T399 is a time required for transferring 300 mg of the toner to the pan 7 [of the feeder in Fig. 1], and T750 is a time required for transferring 750 mg of the toner to the pan 7."

(7) The term "salting-out/fusion-adherence process" is defined at page 58, lines 19-23, as "salting-out (coagulation of particles) and fusion (disappearance of particle boundary) process at the same time, or means any action causing salting-out and fusion-adherence at the same time."

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

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10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f), or (g) prior art under 35 U.S.C. 103(a).

11. Claims 1-5 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over US 2002/0037469 A1 (Kohyama), as evidenced by Grant & Hackh's Chemical Dictionary, 5th edition, page 357.

Kohyama discloses a non-magnetic black toner 10Bk, which comprises toner particles comprising a binder resin, carbon black, and a releasing agent. The toner further comprises externally added hydrophobic silica having a number average primary particle size of 10 nm, and externally added "hydrophobic titanium [sic: oxide]" having a number average primary particle size of 25 nm. See Toner 10Bk at paragraph 0376, and paragraph 0413. The number average primary particle sizes of the externally added hydrophobic silica and hydrophobic titanium meet the number average primary particle diameters recited in instant claims 3-5. The toner particles are obtained by a "salting-out/fusion-adherence process of a

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resin particle and a colorant particle proceeded in a water-based medium" as recited in the product-by process limitation recited in instant claim 6. See paragraphs 0374-0376, and Table 2, toner 10Bk. The resin particles comprise the resin particles HP-1, MP-5, and LP-1, which have peaks in the molecular weight distribution ranges of 518,000, 102,000, and 18,000, respectively. Paragraphs 0335, 0354, and 0373. The molecular weight peaks are within the ranges of 100,000 to 1,000,000 and of 1,000 to 50,000, recited in instant claim 2. Accordingly, the toner 10Bk has peaks in molecular weight distributions that meet the ranges recited in instant claim 2.

Kohyama further teaches that in the process of making the toner particles, the growth of the toner particles was stopped when the toner particles reached the volume average particle size of 6.5 μm . Paragraph 0375, lines 19-24. Thus, it is reasonable to conclude that the volume average particle size of the toner 10Bk is about 6.5 μm , which is within the range of 3 to 9 μm recited in instant claim 1. The burden is on applicants to prove otherwise. In re Fitzgerald, 205 USPQ 594 (CCPA 1980).

The toner particles of toner 10Bk have an average "shape coefficient" of 1.43, a "coefficient of number particle diameter distribution" of 22%, a "coefficient of variation of shape coefficient" of 13%, and a ratio of "particles having no corner"

of 87% by number. Toner 10Bk at paragraph 0376, and Table 7 at page 25, Toner 10Bk. The values of the "coefficient of number particle diameter distribution" and "coefficient of variation of shape coefficient" are within the ranges of "16% or less" and "26% or less," respectively recited in instant claim 1. The "shape coefficient," the "coefficient of number particle diameter distribution," and "coefficient of variation of shape factor" have the same definitions as the "shape factor" and the coefficients recited in the instant claims, and are determined by the same methods as disclosed in the instant specification. Compare paragraph 7, supra, and Kohyama, paragraphs 0089-0091, 0096-0097, and 0103-0105. The number value of the ratio of "particles having no corner" is within the "ratio of rounded toner particle" range of "50% by number or more." The Kohyama ratio of "particles having no corner" appears to have the same definition as the "ratio of rounded toner particle" as recited in instant claim 1. Compare paragraph 7, supra, and Kohyama, paragraphs 0111-0112, and Fig. 1(a). Thus, the Kohyama ratio of "particles having no corner" appears to be the same as the "ratio of rounded toner particles."

Kohyama does not identify its average "shape coefficient" of 1.43 as an arithmetic mean as recited in instant claim 1. However, as discussed supra, the Kohyama shape coefficient has

the same definition as the "shape factor" recited in instant claim 1. The average shape factor in Kohyama is determined by taking a photograph of toner particles magnified by a factor of 2000 under a scanning electron microscope and analyzing the obtained photograph using a "Scanning Image Analyzer." The shape coefficients of 100 toner particles were calculated according to the formula disclosed in paragraphs 0089-0090 of Kohyama. Kohyama, paragraph 0091. The instant specification at page 20, lines 11-18, discloses that the "arithmetic mean value of the shape factors was measured by taking a photograph of the toner particles at a 2,000 × magnification under a scanning electron microscope, and by analyzing the obtained photograph using the 'SCANNING IMAGE ANALYZER' . . . The shape factors of 100 toner particles are obtained herein by calculation using the equation above [at page 20, lines 4-10], and the arithmetic mean value thereof is obtained." The term "arithmetic mean" is defined as the "average, mean. The quotient obtained by dividing the sum of n numbers by n ; hence, $(a + b + c + d)/4 =$ arithmetic mean of a , b , c , and d ." See Grant & Hackh's Chemical Dictionary, 5th edition, p. 357. Because the Kohyama "shape coefficient" has the same definition and is determined in the same manner as the "shape factor" recited in the instant claims, the term "arithmetic mean" is defined as an "average,"

and the Kohyama average "shape coefficient" of 1.48 is within the numerical range of 1.1 to 1.5 recited in instant claim 1, it is reasonable to conclude that the Kohyama average "shape coefficient" of 1.43 meets the "arithmetic mean value of shape factor" recited in instant claim 1. The burden is on applicants to prove otherwise. Fitzgerald, supra.

Kohyama does not disclose that the toner 10Bk has a "conveyance index of 2.0 to 10.0" recited in instant claim 10. However, as discussed supra, Kohyama meets the compositional limitations recited in instant claims 2-5, and meets the "coefficient of variation of shape factor," the "ratio of rounded toner particle," and "coefficient of variation of number particle diameter distribution," the volume average particle size, and the "arithmetic mean value of shape factor" recited in instant claim 1. The instant specification at page 19, lines 4-9, discloses that when the "toner of the present invention has an arithmetic mean value of shape factor of 1.1 to 1.5, a coefficient of variation of shape factor of 16% or less, a ratio of rounded toner of 50 percent by number or more [,][T]his facilitates the conveyance index of the toner to be regulated within the specific range." The instant specification at page 19, lines 15-20, discloses that "[a]djustment of a coefficient of variation of number particle diameter

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distribution of the toner of 26% or less is successful in sharpening the particle diameter distribution of the toner, is consequently successful in controlling the conveyance index of the toner within a specific range." Thus, because the Kohyama toner 10Bk meets the compositional limitations recited in instant claims 2-5, and has a "coefficient of variation of shape factor," a "ratio of rounded toner particle," a "coefficient of variation of number particle diameter distribution," a volume average particle size, and an "arithmetic mean value of shape factor," as recited in instant claim 1, it is reasonable to presume that the Kohyama toner 10Bk has a conveyance index that is with the range recited in instant claim 1. The burden is on applicants to prove otherwise. Fitzgerald, supra.

The recitation "[a] toner used for an image forming method comprising the steps of: limiting the amount of toner on a surface of a toner carrier . . . and developing an electrostatic latent image . . . based on a non-magnetic single component development system" in the instant claims is a statement of intended use, which does not distinguish the toner composition disclosed by Kohyama. The recitation of the intended use of the claimed invention must result in a structural or compositional difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the

prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. See In re Casey, 152 USPQ 235 (CCPA 1967) and In re Otto, 136 USPQ 458, 459 (CCPA 1963). As discussed above, the toner disclosed by Kohyama meets the compositional and structural limitations recited in the instant claims. Thus, the intended use recited in the instant claims does not result in a compositional or structural difference between the toner recited in the instant claims and the toner disclosed in the prior art.

12. Claim 6 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As discussed in paragraph 11 above, Kohyama teaches that its toner particles are obtained by "a salting-out/fusion-adherence process" of resin particles and a colorant particle in a water-based medium that meets the product-by-process limitation recited in instant claim 6. However, Kohyama does not disclose the softening point of the resin particles used. Nor is there enough information on the present record for a person having ordinary skill in the art to reasonably presume

that the resin particles disclosed in Kohyama have a softening point of 90 to 140°C as recited in instant claim 6.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janis L. Dote whose telephone number is (571) 272-1382. The examiner can normally be reached Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Mark Huff, can be reached on (571) 272-1385. The central fax phone number is (703) 872-9306.

Any inquiry regarding papers not received regarding this communication or earlier communications should be directed to Supervisory Application Examiner Ms. Claudia Sullivan, whose telephone number is (571) 272-1052.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JLD
Nov. 18, 2004

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